

*Listing of the Claims*

This listing of claims will replace all prior versions, and listings of claims in the application.<sup>1</sup>

1. (previously presented) An isolated nucleic acid molecule comprising a polynucleotide selected from the group consisting of:

- a. a polynucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 908 in SEQ ID NO:5;
- b. a polynucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 859 in SEQ ID NO:6;
- c. a polynucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 912 in SEQ ID NO:7;
- d. a polynucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 853 in SEQ ID NO:8;
- e. a polynucleotide sequence that is at least 90% identical to the polynucleotide sequence of (a), (b), (c) or (d); and *encoding a polypeptide*
- f. a polynucleotide sequence fully complementary to the polynucleotide sequence of (a), (b), (c), (d) or (e); *encoding a polypeptide*

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<sup>1</sup> Since the Examiner indicated that the proposed claims amendments filed on December 6, 2006 would be entered for purposes of appeal (see Advisory Action, item #7), the claim listing below includes those amendments as having been entered.

wherein said polypeptide methylates DNA in an *in vitro* assay.

2. (canceled).

2 3. (original) A method of making a recombinant vector comprising inserting an isolated nucleic acid molecule of Claim 1 into a vector selected from a group consisting of:

- a. a DNA vector; and
- b. an RNA vector.

3 4. (original) A recombinant vector comprising the isolated nucleic acid molecule of Claim 1.

4 5. (original) A method of making <sup>an isolated</sup> ~~a~~ recombinant host cell comprising introducing the recombinant vector of Claim <sup>3</sup> ~~4~~ into a host cell.

5 6. (original) <sup>An isolated</sup> ~~A~~ recombinant host cell comprising the vector of Claim <sup>3</sup> ~~4~~.

6 7. (original) A method for producing a *de novo* DNA cytosine methyltransferase polypeptide, comprising culturing the recombinant host cell of Claim <sup>5</sup> ~~6~~ under conditions such that said polypeptide is expressed and recovering said polypeptide.

7  
8.

(previously presented) An isolated oligonucleotide probe or primer ~~comprising~~  
~~polynucleotides~~ selected from the group consisting of:

- a. at least 50 contiguous nucleotides of SEQ ID NO:1,  
provided that said nucleotides are not AA052791(SEQ ID  
NO: 9); AA111043(SEQ ID NO:10); AA154890(SEQ ID  
NO:11); AA240794(SEQ ID NO:12); AA756653(SEQ ID  
NO:13); W58898(SEQ ID NO:14); W59299(SEQ ID  
NO:15); W91664(SEQ ID NO:16); W91665(SEQ ID  
NO:17); and
- b. a nucleotide sequence fully complementary to <sup>the</sup>  
a nucleotide  
sequence in (a).

8  
9.

(previously presented) An isolated oligonucleotide probe or primer ~~comprising~~  
~~polynucleotides~~ selected from the group consisting of:

- a. at least 30 contiguous nucleotides of SEQ ID NO:2,  
provided that said nucleotides are not AA116694 (SEQ ID  
NO:18); AA119979 (SEQ ID NO:19); AA177277 (SEQ  
ID NO:20); AA210568 (SEQ ID NO:21); AA399749  
(SEQ ID NO:22); AA407106 (SEQ ID NO:23);  
AA575617 (SEQ ID NO:24); and
- b. a nucleotide sequence fully complementary to <sup>the</sup>  
a nucleotide  
sequence in (a).

10-12. (canceled).

<sup>9</sup>  
~~13.~~ (previously presented) A method for *in vitro de novo* methylation of DNA, comprising:

- a. contacting said DNA with a *de novo* DNA cytosine methyltransferase polypeptide encoded by the nucleic acid molecule of any of parts (a)-(e) of claim 1;
- b. providing an appropriately buffered solution with substrate and cofactor; and
- c. purifying said DNA.

14-24. (canceled).

<sup>10</sup>  
~~25.~~ (previously presented) The nucleic acid molecule of claim 1, wherein said polynucleotide is that of part (a).

<sup>11</sup>  
~~26.~~ (previously presented) The nucleic acid molecule of claim 1, wherein said polynucleotide is that of part (b).

<sup>12</sup>  
~~27.~~ (previously presented) The nucleic acid molecule of claim 1, wherein said polynucleotide is that of part (c).

~~13~~ 28. (previously presented) The nucleic acid molecule of claim 1, wherein said polynucleotide is that of part (d).

~~14~~ 29. (previously presented) The nucleic acid molecule of claim 1, wherein said polynucleotide is that of part (e).

~~15~~ 30. (previously presented) The nucleic acid molecule of claim 1, wherein said polynucleotide is that of part (f).

~~16~~ 31. (previously presented) An isolated nucleic acid molecule comprising a polynucleotide selected from the group consisting of:

- a a polynucleotide sequence encoding mouse Dnmt3a polypeptide contained in ATCC Deposit No. 209933;
- b. a polynucleotide sequence encoding mouse Dnmt3b polypeptide contained in ATCC Deposit No. 209934;
- c. a polynucleotide sequence encoding human DNMT3A polypeptide contained in ATCC Deposit No. 98809;
- d. a polynucleotide sequence encoding human DNMT3B polypeptide contained in ATCC Deposit No. 326637;
- e. a polynucleotide sequence at least 90% identical to the <sup>encoding a polypeptide</sup> polynucleotide sequence of (a), (b), (c) or (d); and
- f. a polynucleotide sequence fully complementary to the <sup>encoding a polypeptide</sup> polynucleotide sequence of (a), (b), (c), (d) or (e);

wherein said polypeptide methylates DNA in an *in vitro* assay.

<sup>17</sup>  
~~32.~~ (previously presented) The nucleic acid molecule of claim <sup>16</sup>~~31~~, wherein said polynucleotide is that of part (a).

<sup>18</sup>  
~~33.~~ (previously presented) The nucleic acid molecule of claim <sup>16</sup>~~31~~, wherein said polynucleotide is that of part (b).

<sup>19</sup>  
~~34.~~ (previously presented) The nucleic acid molecule of claim <sup>16</sup>~~31~~, wherein said polynucleotide is that of part (c).

<sup>20</sup>  
~~35.~~ (previously presented) The nucleic acid molecule of claim <sup>16</sup>~~31~~, wherein said polynucleotide is that of part (d).

<sup>21</sup>  
~~36.~~ (previously presented) The nucleic acid molecule of claim <sup>16</sup>~~31~~, wherein said polynucleotide is that of part (e).

<sup>22</sup>  
~~37.~~ (previously presented) The nucleic acid molecule of claim <sup>16</sup>~~31~~, wherein said polynucleotide is that of part (f).

<sup>23</sup>  
~~38.~~ (previously presented) An isolated nucleic acid molecule comprising a polynucleotide at least 95% identical to a polynucleotide selected from the group consisting of:

- a. a polynucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 908 in SEQ ID NO:5;
- b. a polynucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 859 in SEQ ID NO:6;
- c. a polynucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 912 in SEQ ID NO:7;
- d. a polynucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 853 in SEQ ID NO:8; and
- e. a polynucleotide sequence fully complementary to the polynucleotide sequence of (a), (b), (c) or (d),<sup>encoding a polypeptide</sup>

wherein said polypeptide methylates DNA in an *in vitro* assay.

~~24~~  
~~39.~~

(previously presented) The nucleic acid molecule of claim ~~38~~<sup>23</sup>, wherein said polynucleotide is that of part (a).

~~25~~  
~~40.~~

(previously presented) The nucleic acid molecule of claim ~~38~~<sup>23</sup>, wherein said polynucleotide is that of part (b).

<sup>26</sup>/<sub>41</sub>. (previously presented) The nucleic acid molecule of claim <sup>23</sup>/~~38~~, wherein said polynucleotide is that of part (c).

<sup>27</sup>/<sub>42</sub>. (previously presented) The nucleic acid molecule of claim <sup>23</sup>/~~38~~, wherein said polynucleotide is that of part (d).

<sup>28</sup>/<sub>43</sub>. (previously presented) The nucleic acid molecule of claim <sup>23</sup>/~~38~~, wherein said polynucleotide is that of part (e).

<sup>29</sup>/<sub>44</sub>. (previously presented) An isolated nucleic acid molecule comprising a polynucleotide selected from the group consisting of:

- a. SEQ ID NO:1;
- b. SEQ ID NO:2;
- c. SEQ ID NO:3;
- d. SEQ ID NO:4;
- e. a polynucleotide sequence that is at least 90% identical to the polynucleotide sequence of (a), (b), (c) or (d); and
- f. a polynucleotide sequence fully complementary to the polynucleotide sequence of (a), (b), (c), (d) or (e),

wherein said polynucleotide of parts (a)-(e) encodes a polypeptide that methylates DNA in an *in vitro* assay.



~~30~~  
~~45.~~ (previously presented) The nucleic acid molecule of claim ~~44~~<sup>29</sup>, wherein said polynucleotide is that of part (a).

~~31~~  
~~46.~~ (previously presented) The nucleic acid molecule of claim ~~44~~<sup>29</sup>, wherein said polynucleotide is that of part (b).

~~32~~  
~~47.~~ (previously presented) The nucleic acid molecule of claim ~~44~~<sup>29</sup>, wherein said polynucleotide is that of part (c).

~~33~~  
~~48.~~ (previously presented) The nucleic acid molecule of claim ~~44~~<sup>29</sup>, wherein said polynucleotide is that of part (d).

~~34~~  
~~49.~~ (previously presented) The nucleic acid molecule of claim ~~44~~<sup>29</sup>, wherein said polynucleotide is that of part (e).

~~35~~  
~~50.~~ (previously presented) The nucleic acid molecule of claim ~~44~~<sup>29</sup>, wherein said polynucleotide is that of part (f).